Claims

1. A method for characterizing jitter of a repetitive signal, comprising:

establishing an array of frequencies;

acquiring a set of pseudo-randomly timed samples at a first designated position on the repetitive signal;

assigning a first set of jitter values to the set of pseudo-randomly timed samples;

selecting a frequency from the array based on a correlation of the assigned jitter values in the first set with the frequencies in the array, wherein the selected frequency has the highest correlation.

2. The method of claim 1 wherein establishing the array of frequencies includes acquiring periodically timed samples at a second designated position, assigning a second set of jitter values to the periodically timed samples, and transforming the second set of jitter values to a corresponding spectrum, wherein the array of frequencies includes the frequency of an identified signal peak in the spectrum and frequencies at integer multiples of the rate at which the periodically timed samples are acquired.

3. The method of claim 2 wherein assigning the second set of jitter values to the periodically timed samples includes establishing a mapping between amplitude and time on an amplitude transition that includes the second designated position.

4. The method of claim 3 wherein the mapping includes one of a linear function relating amplitude and time, a polynomial relating amplitude and time, and a look-up table relating amplitude and time.

5. The method of claim 1 wherein assigning the first set of jitter values to the set of pseudo-randomly timed samples comprises determining the amplitudes of the pseudo-randomly timed samples in the set, and wherein selecting a frequency from the array based on a correlation of the assigned jitter values in the first set with the frequencies in the array comprises selecting a frequency from the array based on a correlation of the determined amplitudes with the frequencies in the array.

6. The method of claim 1 wherein the set of pseudo-randomly timed samples is acquired at pseudo-random integer multiples of a ratio of a pattern length of the repetitive signal to a bit rate of the repetitive signal.

7. The method of claim 2 wherein the set of pseudo-randomly timed samples is acquired at pseudo-random integer multiples of a ratio of a pattern length of the repetitive signal to a bit rate of the repetitive signal.

8. The method of claim 4 wherein the set of pseudo-randomly timed samples is acquired at pseudo-random integer multiples of a ratio of a pattern length of the repetitive signal to a bit rate of the repetitive signal.

9. A method for characterizing jitter of a repetitive waveform, comprising:

identifying a frequency of a signal peak in a spectrum of the repetitive signal resulting from periodic sampling of the repetitive signal;

establishing an array of frequencies based on the signal peak;

acquiring a set of pseudo-randomly timed samples at a first position on an amplitude transition of the repetitive signal;

assigning a first set of jitter values to each of the pseudo-randomly timed samples in the acquired set;

selecting a frequency from the array of frequencies based on a correlation of the assigned jitter values in the first set with the frequencies in the array.

10. The method of claim 9 wherein the array of frequencies includes the identified frequency of the signal peak and integer multiples of the rate of the periodic sampling of the repetitive signal.

11. The method of claim 9 wherein identifying a frequency of the signal peak in a spectrum of the repetitive signal resulting from periodic sampling of the repetitive signal includes acquiring periodically timed samples at a second position, assigning a second set of jitter values corresponding to the periodically timed samples, and transforming the jitter values in the second set to a corresponding spectrum.

12. The method of claim 10 wherein identifying a frequency of the signal peak in a spectrum of the repetitive signal resulting from periodic sampling of the repetitive signal includes acquiring periodically timed samples at the second position, assigning a second set of jitter values corresponding to the periodically timed samples, and transforming the jitter values in the second set to a corresponding spectrum.

13. The method of claim 9 wherein assigning the second set of jitter values to the pseudo-randomly timed samples in the acquired set comprises determining the amplitudes of the pseudo-randomly timed samples in the acquired set, and wherein selecting a frequency from the array based on the correlation of the assigned jitter values in the first set with the frequencies in the array comprises selecting a frequency from the array based on a correlation of the determined amplitudes with the frequencies in the array.

14. The method of claim 9 wherein the set of pseudo-randomly timed samples is acquired at pseudo-random integer multiples of a ratio of a pattern length of the repetitive signal to a bit rate of the repetitive signal.

15. The method of claim 10 wherein the set of pseudo-randomly timed samples is acquired at pseudo-random integer multiples of a ratio of a pattern length of the repetitive signal to a bit rate of the repetitive signal.

16. The method of claim 11 wherein the set of pseudo-randomly timed samples is acquired at pseudo-random integer multiples of a ratio of a pattern length of the repetitive signal to a bit rate of the repetitive signal.

17. A system for characterizing jitter of a repetitive waveform, comprising:

a sampler acquiring a set of pseudo-randomly timed samples at a designated position on a designated amplitude transition of the repetitive signal;

a processor coupled to the sampler, assigning a jitter value to each of the samples in the acquired set and selecting a frequency from an array of frequencies based on a correlation of the assigned jitter values with the frequencies in the array.

18. The system of claim 17 wherein the array of frequencies is established by acquiring periodically timed samples at the designated position, assigning corresponding jitter values to the periodically timed samples, and transforming the jitter values assigned from the periodically timed samples to a corresponding spectrum, wherein the array of frequencies includes the frequency of an identified signal peak in the spectrum and frequencies at integer multiples of the rate at which the periodically timed samples are acquired.

19. The system of claim 17 wherein assigning a jitter value to each of the pseudo-randomly timed samples in the acquired set comprises determining the amplitudes of each of the pseudo-randomly timed samples in the acquired set, and wherein selecting a frequency from the array based on the correlation of the assigned jitter values from the pseudo-randomly timed samples with the frequencies in the array comprises selecting a frequency from the array based on a correlation of the determined amplitudes with the frequencies in the array.

20. The system of claim 17 wherein the set of pseudo-randomly timed samples is acquired at pseudo-random integer multiples of a ratio of a pattern length of the repetitive signal to a bit rate of the repetitive signal.